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23. 26. (our northern limit), and with a termination equally fortunate as that of the late undertaking."

[At a general meeting of the Members of the Association, held at Cape Town on the 19th of March, 1836, Sir John Herschel in the chair, it was resolved unanimously,—

"That the only adequate thanks which can be rendered to Dr. Smith are, that he be requested to undertake the next expedition."]

It is to be hoped that the important geographical information obtained will soon be made public.

II.—*Notice of the Chronometric Expedition of Lieutenant-General Schubert, executed in 1833, to determine the Longitude of the most important Points on the Coast of the Baltic.* Communicated by M. Kupffer, Mem. Ac. Scien. St. Petersburg, Corr. Mem. R.G.S. of London.

BY order of the Emperor, a steam-boat and fifty-six chronometers were placed at the disposal of Lieutenant-General Schubert, Directeur des Dépôts de Cartes de l'Etat-Major et de l'Amirauté, for the purpose of visiting, during the summer of 1833, the most important points of the Baltic, and of determining their longitude. That a great number of points might be visited during the short period of the northern summer, observers were sent beforehand to the various points, to determine the time, by means of transit and other instruments, which give the time with great precision. By these means, General Schubert had only occasion to stop at each point the time necessary to compare the chronometers with the astronomical clock there established, of which the rate was very exactly known by prior and subsequent observations, and was not obliged to wait for fine weather at each place.

He was thus enabled, in one summer, to make the circuit three times of all these points.

To give still greater extent to the undertaking, the Russian Government entered into communication with the Governments of Prussia, Denmark, and Sweden, who, on their part, also sent observers to the most important points of their territories washed by the Baltic. It is thus that Stockholm, Altona, and Lübeck have been comprised in the chain of points of which the longitude has been determined by this expedition. The results which have been obtained are shown in the following tables.

PLACE.	North Latitude.	Long. East of Greenwich.		Diff. from Naut. Almanac and Conn. des Temps.
		In Time.	In Degrees, &c.	
Altona, Meridian Circle .	53° 32' 45" 00	h. m. s. 0 39 46.600	9° 56' 39" 0	+0' 1.5
Lubeck, Transit Instrument of temp. Observatory }	53 51 29.87	0 42 45.764	10 41 26.46	+0 35.03
The Nor. Tower of the Church of St. Mary's }	53 52 5.88	0 42 44.798	10 41 11.97	
Centre of the Navigation School . . }	53 51 29.98	0 42 45.654	10 41 24.81	
Old Observatory . . .	.	0 42 41.298	10 40 19.47	
Travemünde, the Steeple : Lighthouse . . .	53 57 25.67 53 57 39.51	0 43 28.085 0 43 31.551	10 52 1.275 10 52 53.265	+1 41.235
Copenhagen, Observatory, Bastion of Holken, Observatory of the University, or Round Tower . . . .	.. 55 40 53.30	0 50 18.983 0 50 19.553	12 34 44.743 12 34 53.295	{+0 3.705* {-0 10.795}
Ankona, temp. Observatory. Lighthouse . . .	54 40 50.80 54 40 48.80	0 53 46.183 0 53 45.903	13 26 32.745 13 26 28.545	
Swinemünde, temporary Observatory	53 54 46.9	0 57 3.561	14 15 53.415	
Old Tower of the Pilots	53 54 47.6	0 57 3.452	14 15 51.78	
Christiansö, temporary Observatory	55 19 23.00	1 0 47.404	15 11 51.06	-0 5.28
Conductor of Lighthouse	55 19 18.68	1 00 46.652	15 11 39.78	
Pavilion of the Gt. Tower	55 19 18.90	1 0 46.603	15 11 39.045	
Small Tower at Fredriksholm . . .	55 19 24.00	1 0 45.865	15 11 27.975	
Karlsrona, temporary Observatory at Gertkärj	55 8 51.3	1 2 24.528	15 36 7.92	
Tower of the Clock . . .	56 9 30.96	1 2 20.879	15 35 13.185	
German Church . . .	56 9 39.11	1 2 20.795	15 35 11.925	
Admiralty Church . . .	56 9 23.47	1 2 21.995	15 35 29.925	
Humholm Church . . .	56 9 40.80	1 2 23.669	15 35 55.035	
Pavilion at Drottningkär	56 6 39.55	1 2 15.843	15 33 57.645	
Lotskik at Aopö . . .	56 6 29.96	1 2 13.878	15 33 28.17	
Oland, temporary Observatory Lighthouse	56 11 47.65 56 11 49.66	1 5 39.515 1 5 39.446	16 24 52.725 16 24 51.69	
Stockholm, transit Instrument of Observatory	59 20 34.80	1 12 16.504	18 4 7.56	-0 25.06
Church of St. Katherine	59 19 7.06	1 12 22.137	18 5 32.055	
Arholma, Lighthouse . . .	59 50 58.20	1 16 29.486	19 7 22.29	
Söderarms, Lighthouse . . .	59 45 15.16	1 17 40.954	19 25 14.31	+1 23.19
Westerskär, Signal . . .	59 35 34.91	1 16 38.730	19 9 40.95	
Lands-Ort, Lighthouse . . .	58 44 27.93	1 11 31.118	17 52 46.725	-0 39.225
Dantzig, Observatory of the Naval School . . .	54 21 19.5	1 14 41.056	18 40 15.84	-0 40.345
Tower of Parish Church	54 21 4.0	1 14 39.103	18 39 46.545	
Old Observatory on the Bischofsberg . . .	54 20 47.5	1 14 35.523	18 38 52.845	
Lighthouse at Neufahrwasser	54 24 15.9	1 14 41.823	18 40 27.345	
Steeple at Weichselmitinde	54 23 49.5	1 14 45.529	18 41 22.935	
Gothland, temporary Observatory at Katthamra	57 25 52.93	1 15 26.685	18 51 40.273	
Grogarn Lighthouse . . .	57 26 29.47	1 15 0.755	18 45 11.325	
Koenigsberg, Observatory .	54 42 50.38	1 22 0.885	20 30 13.275	{-0 5.775* {-0 8.775}
Swalferort, Lighthouse . .	57 54 35.37	1 28 20.987	22 5 14.805	
Dagerort, do. . . .	58 54 59.13	1 28 47.571	22 11 53.565	
Abo, Old Observatory of the University . . .	60 26 58.00	1 29 10.045	22 17 30.675	{-0 18.675* {-0 23.175}

Those marked thus * are from the Nautical Almanac.

PLACE.	North Latitude.	Long. East of Greenwich.		Diff. from Naut. Almanac and Conn. des Temps.
		In Time.	In Degrees, &c.	
Odensholm, Lighthouse .	59° 18' 19.31	h. m. s. 1 33 27.919	23 21 53.785	" "
Surop, do. .	59 27 55.00	1 37 32.609	24 23 9.135	+ 2 53.24
Torkala Udd, do. .	59 56 10.32	1 37 35.284	24 23 49.26	
Norgou, do. .	59 36 22.23	1 38 4.251	24 31 3.765	
Reval, Transit Instrument of the Observatory .	59 26 7.48	1 39 11.539	24 47 53.085	- 1 30.585
Cathedral . . .	59 26 19.77	1 38 58.676	24 44 40.14	
Church of St. Nicolas .	59 26 15.64	1 38 59.534	24 44 53.01	
Church of St. Olay .	59 26 35.08	1 39 0.908	24 45 13.620	
Korskär, Lighthouse .	59 41 59.64	1 40 6.846	25 1 42.69	
Helsingfors, Observatory of the University .	60 9 41.97	1 39 49.911	24 57 28.665	+ 4 18.835
Klok Hapel, Tower of the Town Hall . .	60 10 10.12	1 39 50.541	24 57 38.115	
Church of Holy Trinity .	60 10 15.14	1 39 49.646	24 57 24.69	
Lutheran Church in the new suburbs . .	69 9 58.14	1 39 46.811	24 56 42.165	
Socaborg, Windmill of Wes- tersoart . . .	60 8 54.05	1 39 55.184	24 58 47.76	
Pavilion at Gustafs-Värd .	60 8 22.60	1 39 58.558	24 59 38.37	
Gritcharn, Lighthouse . .	60 6 18.48	1 39 55.517	24 58 52.755	+ 3 24.745
Ekhholm, do. . .	59 41 8.11	1 43 11.927	25 47 58.905	
Rotshar, do. . .	59 58 10.17	1 46 43.773	26 40 56.595	
Hockland, temp. Observatory Mäggje, Pälus (northern extremity of the trian- gulation of M. Struve)	60 6 17.07	1 47 50.888	26 57 43.32	
Upper Lighthouse . .	60 5 40.57	1 47 49.597	26 57 23.955	+ 0 7.545
Lower do. . .	60 6 19.68	1 47 50.871	26 57 43.065	
Chimney of the Coast- ing-Pilots' house .	60 5 34.96	1 47 55.428	26 58 51.42	
Dorpat, Meridian Circle of the Observatory . .	.. .	1 46 54.056	26 43 30.84	{ + 0 14.16* + 0 4.66
Sommers, Lighthouse . .	60 12 25.33	1 50 34.760	27 38 41.4	
Sishar, do. . .	60 2 8.92	1 53 27.827	28 21 57.405	
Tolbuchin, do. . .	60 2 35.18	1 58 10.339	29 32 35.085	
Broanaia, Signal-staff on Hill .	59 55 5.42	1 58 31.926	29 37 58.89	
Kronstadt, temp. Observatory Steeple of the Cathedral Observatory of the Pi- lots' School . .	59 59 29.30	1 59 1.000	29 45 15.	
59 59 45.90	1 59 4.026	29 46 0.39		
59 59 23.16	1 59 3.563	29 45 53.445	+ 3 44.055	
St. Petersburg, Observatory of the Academy of Sciences . . .	59 56 31.46	2 1 13.369	30 18 20.535	{ + 0 36.465* + 0 35.965
Observatory of the Etat- Major . . .	59 56 17.28	2 1 16.108	30 19 1.62	
Observatory of the Corps de la Marine . .	59 56 7.74	2 1 7.383	30 16 50.745	
Pulkowa, Central Observato- ry (lately founded), centre of the mid- dle tower . . .	59 46 20.43	2 1 18.565	30 19 38.475	

[The column marked 'Difference' shows the excess or deficit of the longitudes as given in our best authorities, the Nautical Almanac of 1837 and Connoissances des Temps of 1838 (marked + or -), of the longitudes as given by Gen. Schubert, assuming these as the Standard—e.g. Copenhagen by the Nautical Almanac is in long. 120° 34' 57" or 3° 705+, or in excess of Gen. Schubert's determination.

N.B. Altona, the point of connection with Greenwich, agrees precisely with its position as given by the Nautical Almanac for 1837.—Ed.]

According to the custom of our navigators, the longitude has been calculated from Greenwich, although this point has not been visited by the expedition; yet, as the difference of the longitude of Greenwich and that of Altona, the most western point of our chain, is exactly known, it was easy to reduce all the longitudes to the meridian of Greenwich. The latitudes have also been added, as ascertained by former astronomical observations, or determined by the last triangulation, also executed under the direction of Lieut.-Gen. Schubert, as well as by observations made during this expedition.

III.—*On Ground-Ice** in the Siberian Rivers. Communicated by Colonel Jackson, F.R.G.S., (St. Petersburg).

EVERY observation made by the naturalist, which seems to contradict the laws of nature, is condemned to disbelief till the accumulation of evidence forces from scepticism an acknowledgment of conviction. The existence of granite superimposed to secondary rocks, so long denied, is now a fact received and accounted for. In like manner the phenomenon of ice formed at the bottom of rivers has been too frequently observed, and too well authenticated, to admit of further doubt, and now only requires to be satisfactorily explained. As it is but very lately, however, that the subject appears to have engaged attention, fresh observations are still desirable, and I doubt not but the present translation of an article, written by Mr. Weitz †, and as yet unpublished, will be read with interest:—

“ In traversing the rapid rivers of the north, in the beginning of the winter, it is easy to persuade oneself of the formation of ground-ice. These rivers, near their sources in the high lands, flow with great rapidity over a sandy or stony bed, and, notwithstanding the intensity and duration of the cold, and the abundance of snow, they continue to flow, bearing along vast quantities of floating ice, brought from their source, and augmented by what is detached from the sides, as also by what rises from the bottom.

“ The Kann is a river of this kind; it takes its rise in a branch of the Saiansk mountains, and empties itself into the Jeneseï, forty versts from Krasnojarsk. I traversed this river in November, after much hard frost, and had an opportunity of observing the

* I by no means approve of the term ground-ice as applied to that which is formed at the bottom of rivers, and merely use it in conformity with custom. I think the term *bottom-ice*, though certainly less elegant, more explicit. I would confine the term *ground-ice* to that which is sometimes found a few feet below the surface of the soil in the ground itself.

† Superior Officer of the Imperial Russian Mining Corps. The original is in Russ.